2013 HyspIRI Products Symposium

Theme: **"HyspIRI Products for Societal Benefit Areas (SBAs) and Aquatic Studies"**
Dates: May 29 – 30 (Wed-Thu) 2013
***Location*:** NASA/GSFC, Building 34, Conference Room W150, Breakout Rooms W120A, W120B, W305

First Day - May 29, 2013

8:00 Registration/ Posters Up in Room W120B/ Coffee

8:30 Symposium Opening, Goals and Agenda, W150 [*Chair Elizabeth Middleton NASA/GSFC*]
8:40 Current status of HyspIRI mission [*Woody Turner, NASA/HQ Co-Program Scientist*]
8:55 The NASA Applied Sciences Program and the US Group on Earth Observations SBAs: Earth Sciences Serving Society [*Lawrence Friedl, NASA/HQ Associate Director for Applied Sciences*]
9:10 Aircraft campaign – status update, sites, flight plans [*Woody Turner & Ian McCubbin, NASA/JPL*]
9:25 Instruments concept (IC-1): introducing VSWIR & TIR instruments on separate platforms [*Rob Green & Simon Hook, NASA/JPL*]

9:40 - 10:00am Coffee Break

10:00 Ecological Forecasting for Terrestrial and Aquatic Ecosystems, W150 [*Chair Susan Ustin, UC Davis*]
10:00 Improving ecological forecasting with hyperspectral data: A data assimilation system for the Community Land Model [*Andrew Fox, NEON*]
10:20 Evapotranspiration estimation with simulated HyspIRI data over arid lands [*Andrew French, USDA*]
10:40 Plant functional types [*Susan Ustin, UCD*]
11:00 Determining leaf dry matter content using the normalized dry matter index and its possible application for estimating fuel moisture content [*Raymond Hunt, USDA*]
11:20 Data fusion techniques for mapping daily water use at field scales [*Martha Anderson, USDA*]
11:40 Big data for rapid scientific collaboration [*Bob Grossman, OCCP Matsu*]

12:00 Lunch *(12:20 - 1:00pm Aquatic Data Products Breakout, W150)*
- Angular dependence on sand density of the spectral BRDF [*Bill Philpot, Cornell University*]
- Photosynthetic condition of giant Kelp (*Macrocystis pyrifera*) in the Santa Barbara Channel [*Thomas Bell, UC St. Barbara*]

13:00 - 15:00 Coastal & Inland Aquatic Data Products Topical Areas, W150 [*Chair Kevin Turpie, UMBC*]
13:00 Coral reef products for HyspIRI [*Eric Hochberg, BIOS*]
13:20 Use of HyspIRI Observations to get Phytoplankton Functional Groups [*John Moisan, NASA/WFF*]
13:40 Improved Absorption and Taxonomic Composition Estimates with HyspIRI [*Tiffany Moisan, NASA/WFF*]
14:00 Impacts of Spatial and Spectral Resolution on Hyperspectral Remote Sensing of Aquatic Vegetation [*Richard Zimmerman, Old Dominion University*]
14:20 Using hyperspectral airborne PRISM imagery to map vulnerable coastal salt marsh and seagrass habitats [*Heidi Dierssen, University of Connecticut*]
14:40 Hyperspectral Imager for Coastal Ocean (HICO) [*Bo-Cai Gao, Naval Research Lab*]

15:00 – 15:20 Coffee Break

15:20 Special Topics 1, W150 [*Chair Stephen Ungar NASA/GSFC*]
15:20 HyspIRI Aircraft campaign: science goals, project overviews & data sharing [*Rob Green & Simon Hook*]
15:35 Initial science results of the NASA/MAGI airborne instrument at the Salton Sea, CA: implications for environmental studies using HyspIRI data [*David Tratt, University of Pittsburgh*]

15:50 Parallel Discussion Sessions: Charge, Goals and Anticipated Outcome [*Elizabeth Middleton*]
W150 Coastal/inland aquatic products: issues, products & requirements [Kevin *Turpie*] ***
W120A Ecological forecasting: products, requirements & issues [*Susan Ustin*]
W305 Instruments concept (IC-2): discussing benefits and concerns from having VSWIR & TIR on separate platforms [*Simon Hook & Rob Green*]

17:30 Adjourn

6:30pm Happy Hour & Dinner at Ruby Tuesdays

*** *Aquatic breakout talks & discussion topics are listed on a separate page*

2013 HyspIRI Products Symposium

Second Day - May 30, 2013

8:00am Registration/ Posters Up in Room W120B/ Coffee

8:30 Environmental & Human Impacts including Disasters, Natural Hazards, Water Management and Public Health (W150) [*Chair Jeff Luvall, NASA/MSFC*]

8:30 Traceability matrix, HyspIRI products in support of SBA requirements [*Jeff Luvall, NASA/MSFC*]

8:50 Ecologic niche models for neglected tropical diseases (NTD) in data-scarce landscapes based on environmental suitability and poverty-related risk factors at the census tract level used for operational community-based intervention programs [*John B. Malone, Louisiana State University*]

9:10 Volcanic CO_2 measurements from hyperspectral data [*Fabrizia Buongiorno, INGV*]

9:30 The feasibility of systematic inland water quality monitoring with HyspIRI [*Arnold Dekker, CSIRO*]

9:50 Discussion [*Chair Jeff Luvall*]

10:10-10:30 Coffee Break

10:30 Automated, Rapid Processing for Low Latency Data Products (W150) [*Chair Dan Mandl, NASA/GSFC*]

10:30 IPM/Low latency data users: requirements overview [*Dan Mandl, NASA/GSFC*]

10:45 An open GeoSocial API to meet societal needs [*Pat Cappelaere, Vightel Co.*]

11:00 Rapid geo-referencing [*Maria Sazama, NASA/GSFC*]

11:15 Atmospheric correction on the cloud [*Vuong Ly, NASA/GSFC*]

11:30 EDOS next gen

11:45 Discussion [*Chair Dan Mandl*]

12:00 – 13:00 Lunch

DEMO: ENVI Services Engine for Web-Accessible HSI Applications, W120A [Thomas Harris]

13:00 Special Topics, W150 [*Chair Stephen Ungar*]

13:00 Current and future hyperspectral instruments [*Michael Abrams, NASA/JPL*]

13:20 HyspIRI Spectral Library: concept, status and requirements [*Simon Hook, NASA/JPL*]

13:40 Role of imaging spectrometer data for model-based cross-calibration of imaging sensors [*Kurt Thome, NASA/GSFC*]

14:00 Spectral time series for the study of ecosystem function, using EO-1 Hyperion [*Petya Campbell, UMBC*]

14:20 Linking Terrestrial Biosphere Models with Imaging Spectrometry Measurements of Ecosystem Composition, Structure, and Function [*Paul Moorcroft, Harvard*]

14:40 Discussion Synopsis: Ecological Forecasting for Terrestrial and Aquatic Ecosystems [*Susan Ustin*]

14:50-15:15 Coffee Break

15:15 Interactive Poster Presentations, W150 [*1 slide/poster, 2 min/each*]

16:00 HyspIRI products in support of Societal Benefit Areas: *Synopsis from Discussion Sessions and Open Discussions, W150* [*Chairs Woody Turner & Elizabeth Middleton*]

16:00 Coastal and Inland Aquatic Data Products Break-Out [Kevin Turpie]

16:10 Environmental & Human Impacts [Jeff Luvall]

16:20 Rapid Processing for Low Latency [Dan Mandl]

16:30 Instruments concept: impacts on higher level products from placing VSWIR & TIR instruments on separate platforms [Rob Green & Simon Hook]

16:40 *Open Discussions*

17:00 (W150) Summary and review of '*Symposium Report Outline*' [*Elizabeth Middleton & Petya Campbell*]

17:30pm Adjourn

*** Aquatic breakout talks and discussion topics

16:00 Parallel Discussion Session: Coastal/Inland Aquatic Products: issues, products & requirements (W150) [*Turpie, duration ≤2hrs*]

16:00 Aquatic studies with HyspIRI preparatory airborne campaign [*Sherry Palacios, UC Santa Cruz*]

16:20 HyspIRI aquatic data products report [*Kevin Turpie, UMBC*]

- *HyspIRI's potential contributions to wetland studies. [Kevin Turpie, UMBC]*
- *Potential applications of HyspIRI for land/water/ice Geomorphology. [Jo Young-Heon, University of Delware]*
- *Detecting and quantifying water surface features using hyperspectral remote sensing: Strengths and limitations of HyspIRI. [Chuanmin Hu, University of South Florida]*
- *Water-column retrievals. [Emmanuel Devred, Université Laval]*
- *Bathymetry from hyperspectral remote sensing. [ZhongPing Lee, University of Massachusetts Boston]*
- *Benthic data products. [Eric Hochberg, BIOS]*

17:00 Aquatic data products discussion [Chair: *Kevin Turpie, UMBC*]

1. Discussion on candidate suite of data products.

2. Availability of data for product development (HICO, air campaign data, ISS HICO follow-on / HyspIRI concept instrument).

3. Seed questions regarding data product generation:

- *What are the characterization requirements (Radiometric, Spectral, & Polarimetric)?*
- *What are the calibration requirements and strategies and what does the community need to promote (solar, lunar, and vicarious)?*
- *What are the validation requirements and what types of infrastructure will be need to support validation?*
- *What are the computation Infrastructure requirements?*
  -Data volumes & loads
  -Data distribution
- *What is the ancillary data are required?*
  -Spectral library requirements
  -Meteorological and atmospheric
  -Ephemeris data
  -Geolocation requirements

4. Potential issues regarding data product generation:

- *Atmospheric correction techniques: are further developments required for HyspIRI aquatic data products? (e.g., NO2)*
- *Spatial resolution changes from 60m to 1km for depth > 50m. Resolution can be commanded for an in situ study. Is this sufficient for observations such as water surface features or ice-edge phenomena?*
- *Separation of the VSWIR and Thermal instruments*